Pentachlorophenol

Chemical Information
CAS Number - 87-86-5
Alternate Names - 2,3,4,5,6-Pentachlorophenol
General Uses - This chemical was used as a biocide to kill small organisms and is now used as a wood preservative to protect wood from decay and insect attack.
Potential Hazards - This chemical is toxic; inhalation, ingestion, or skin contact may cause severe injury or death.

Summary Analysis– Pentachlorophenol

- In 2003, the 160,760 pounds of pentachlorophenol accounted for 0.4 percent of the total quantity of PCs. Compared to the quantity reported in 1999, there was a 24.5 percent decrease in the quantity of pentachlorophenol; however, compared to the quantities reported in 2000-2002, there was a significant increase.
- Nineteen facilities reported this chemical in 2003. One facility accounted for 83 percent of the total quantity.
- Although disposal of pentachlorophenol had been decreasing since 1999, a dramatic increase in the quantity managed via land disposal occurred in 2003, when over 77 percent of the total quantity was land disposed. Many facilities also used offsite treatment. Recycling of pentachlorophenol decreased from a high of 23,383 pounds in 1999 to a low of only 54 pounds in 2003.
- In 2003, facilities in 6 EPA Regions reported pentachlorophenol. Facilities in Region 6 reported the largest quantity of pentachlorophenol in 2003, accounting for 85 percent of the total quantity. The increased quantity for Region 6 was mostly reported by 1 facility in Louisiana. The facility in Region 7 also reported a significant increase. Facilities in the other Regions reported significant decreases of pentachlorophenol in 2003, including zero quantities in Regions 3 and 8. In Region 4, a decrease of about 130,000 pounds was reported in 2003 – more than an 87 percent reduction.
- Pentachlorophenol was reported by facilities in 12 states in 2003. Facilities in Louisiana accounted for over 83 percent of the total quantity of this chemical in 2003, with almost 100 percent of this quantity reported by 1 facility. Facilities in most of the other states reported a decreased or zero quantity in 2003.
- In 2003, 19 facilities in 3 industry sectors reported a PC quantity of pentachlorophenol. Facilities in the SIC 2491 (Wood Preserving) industry sector accounted for almost 100 percent of this chemical in 2003. One facility, located in Louisiana, reported about 84 percent of the total quantity reported by SIC 2491 facilities.

National Trends – Pentachlorophenol. Exhibit 4.192 presents the total PC quantity (pounds) of pentachlorophenol reported in 1999 to 2003, showing the disposal, treatment, energy recovery, as well as recycling quantities. In 2003, the 160,760 pounds of pentachlorophenol accounted for 0.4 percent of the total quantity of PCs. Compared to the quantity reported in 1999, there was a 24.5 percent decrease in the quantity of pentachlorophenol; however, compared to the quantities reported in 2000-2002, there was a significant increase. The number of facilities that reported pentachlorophenol between 1999 and 2000 slightly declined, from 24 facilities in 1999 to 19 facilities reporting this chemical in 2003.

Although disposal of pentachlorophenol had been decreasing since 1999, a dramatic increase in the quantity managed via land disposal occurred in 2003, when about 77 percent of the total quantity was land disposed. Since 1999, treatment of pentachlorophenol decreased steadily but a slight increase occurred in 2003 when about 22 percent of the totals quantity was treated. The use of energy recovery decreased by 95 percent, compared to the quantity in 1999, but has remained relatively constant since 2000 and only used for about 1 percent of the pentachlorophenol. Recycling of pentachlorophenol decreased from a high of 23,383 pounds in 1999 to a low of only 54 pounds in 2003.

Exhibit 4. 192. National-Level Information for Pentachlorophenol (1999-2003)

	1999	2000	2001	2002	2003	Percent Change (1999 -2003)	Management Method -- Percent of Quantity of this Chemical in 2003
Number of Facilities	24	24	25	20	19	-20.8%	
Disposal Quantity (lbs.)	15,615	1,573	2,198	112	123,951	693.8%	77.1%
Energy Recovery Quantity (lbs.)	41,907	4,019	5,017	4,319	2,153	-94.9%	1.3%
Treatment Quantity (lbs.)	155,473	64,198	47,123	32,425	34,656	-77.7%	21.6%
Priority Chemical Quantity (lbs.)	212,995	69,790	54,339	36,856	160,760	-24.5%	
Recycling Quantity (lbs.)	23,383	10,000	3,160	3,261	54	-99.8%	

Exhibit 4.193 shows the number of facilities that reported pentachlorophenol within various quantity ranges. Of the 19 facilities that reported pentachlorophenol in 2003, 1 facility accounted for 83 percent of the total quantity.

Exhibit 4. 193. Distribution of Facilities that Reported Quantities for Pentachlorophenol (2003)

Pentachlorophenol (160,760 pounds)		
Quantity Reported	**Number of Facilities Reporting this quantity (2003)**	**Percent of Total Quantity for this Priority Chemical (2003)**
up to 10 pounds	1	less than 0.1%
between 11 - 100 pounds	4	0.1%
between 101 -1,000 pounds	6	2.1%
between 1,001 - 10,000 pounds	7	14.8%
between 10,001 - 100,000 pounds	0	0.0%
between 100,001 - 1 million pounds	1	83.0%
> 1 million pounds	0	0.0%

EPA Region Trends- Pentachlorophenol. Exhibit 4.194 shows the quantity (pounds) of pentachlorophenol reported by facilities in 8 EPA Regions in 1999 to 2003. In 2003, facilities in 6 of the Regions reported pentachlorophenol (Exhibit 4.195). Facilities in Region 6 reported the largest quantity of pentachlorophenol in 2003, accounting for 85 percent of the total quantity. Compared to previous years, the quantity reported in 2003 was a dramatic increase. This increase was attributed to 1 facility in Louisiana. The facility in Region 7 also reported a significant increase of pentachlorophenol in 2003, double the quantities reported in 2001 and 2002. Facilities in the other Regions reported significant decreases of pentachlorophenol in

2003, including zero quantities in Regions 3 and 8. In Region 4, a decrease of about 130,000 pounds was reported in 2003 – more than an 87 percent reduction.

Exhibit 4. 194. Quantity of Pentachlorophenol Reported by EPA Regions (1999-2003)

EPA Region	1999	2000	2001	2002	2003	Percent Change in Quantity (1999-2003)	Percent of the Total Priority Chemical quantity (2003)
6	6,123	192	541	4,003	136,305	2126.1%	84.8%
4	149,576	17,278	26,337	28,263	19,360	-87.1%	12.0%
10	14,369	6,906	2,475	542	2,092	-85.4%	1.3%
7	6	2	637	726	1,459	24216.7%	0.9%
9	1,500	3,400	755	1,099	955	-36.3%	0.6%
5	704	0	2,697	953	589	-16.3%	0.4%
3	38,657	42,012	20,298	715	0	-100.0%	0.0%
8	2,060	0	599	555	0	-100.0%	0.0%

Exhibit 4. 195. Distribution of Facilities Reporting Pentachlorophenol in 2003 & Quantity of Pentachlorophenol Reported in 2003 by Region

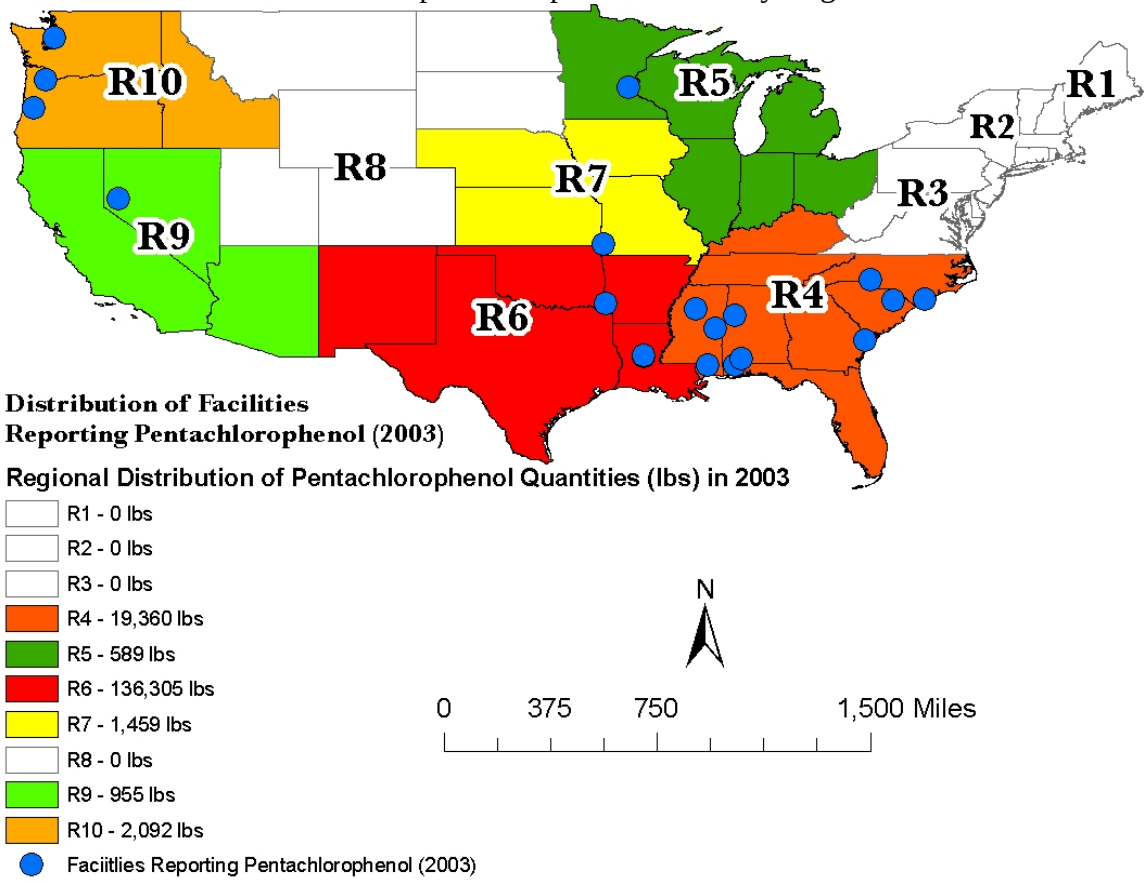

Exhibit 4.196 shows how pentachlorophenol was managed within by facilities in 6 EPA Regions in 2003. In 2003, about 77 percent of the PC quantity of pentachlorophenol was sent to offsite disposal, primarily by I facility in Louisiana. The Region 5 facility also primarily used offsite disposal for most of its pentachlorophenol. Otherwise, facilities in most of the other Regions, with one exception, primarily used offsite treatment for this chemical. The Region 7 facility managed most of its pentachlorophenol via offsite energy recovery.

Exhibit 4. 196. Management Methods for Pentachlorophenol, By EPA Region (2003)

EPA Region	Disposal		Energy Recovery		Treatment		Recycling	
	Onsite Disposal	Offsite Disposal	Onsite Energy Recovery	Offsite Energy Recovery	Onsite Treatment	Offsite Treatment	Onsite Recycling	Offsite Recycling
6	0	123,503	0	0	0	12,802	0	0
4	0	4	0	1,030	226	18,100	52	0
10	0	0	0	0	265	1,827	0	2
7	0	0	0	1,123	0	336	0	0
9	0	0	0	0	0	955	0	0
5	0	444	0	0	23	122	0	0

State Trends- Pentachlorophenol. Exhibit 4.197 shows the quantity of pentachlorophenol, between 1999 and 2003, that was reported by facilities in 15 states. Facilities in Louisiana accounted for over 83 percent of the total quantity of this chemical in 2003, with almost 100 percent of this quantity reported by 1 facility. Facilities in 12 of the 15 states reported a decreased or zero quantity in 2003.

Exhibit 4. 197. State-Level Information for Facilities Reporting Pentachlorophenol (1999-2003)

State	1999	2000	2001	2002	2003	Change in Quantity (1999-2003)	Percent Change in Quantity (1999-2003)	Percent of Total Quantity of this Priority Chemical (2003)
Louisiana	12	90	33	59	133,535	133,523	1112692.3%	83.1%
Mississippi	54,571	3,026	6,753	18,505	10,861	-43,710	-80.1%	6.8%
South Carolina	37,049	2,358	13,025	5,511	6,186	-30,863	-83.3%	3.8%
Arkansas	6,111	102	508	3,944	2,770	-3,341	-54.7%	1.7%
Oregon	14,369	5,182	1,624	542	1,827	-12,542	-87.3%	1.1%
Missouri	6	2	637	726	1,459	1,453	24216.7%	0.9%
North Carolina	1,578	3,684	1,430	1,011	1,157	-421	-26.7%	0.7%
Nevada	1,500	1,400	445	1,099	955	-545	-36.3%	0.6%
Alabama	52,345	6,358	3,229	2,900	924	-51,421	-98.2%	0.6%
Minnesota	704	0	2,697	953	589	-115	-16.3%	0.4%
Washington	0	1,724	851	0	265	265	NA	0.2%
Georgia	4,033	1,852	1,900	336	232	-3,801	-94.2%	0.1%
California	0	2,000	310	0	0	0	NA	0.0%
Maryland	38,657	42,012	20,298	715	0	-38,657	-100.0%	0.0%
South Dakota	2,060	0	599	555	0	-2,060	-100.0%	0.0%

Exhibit 4. 198. Trends Analysis of States Reporting 4 Largest Quantities of Pentachlorophenol (2003)

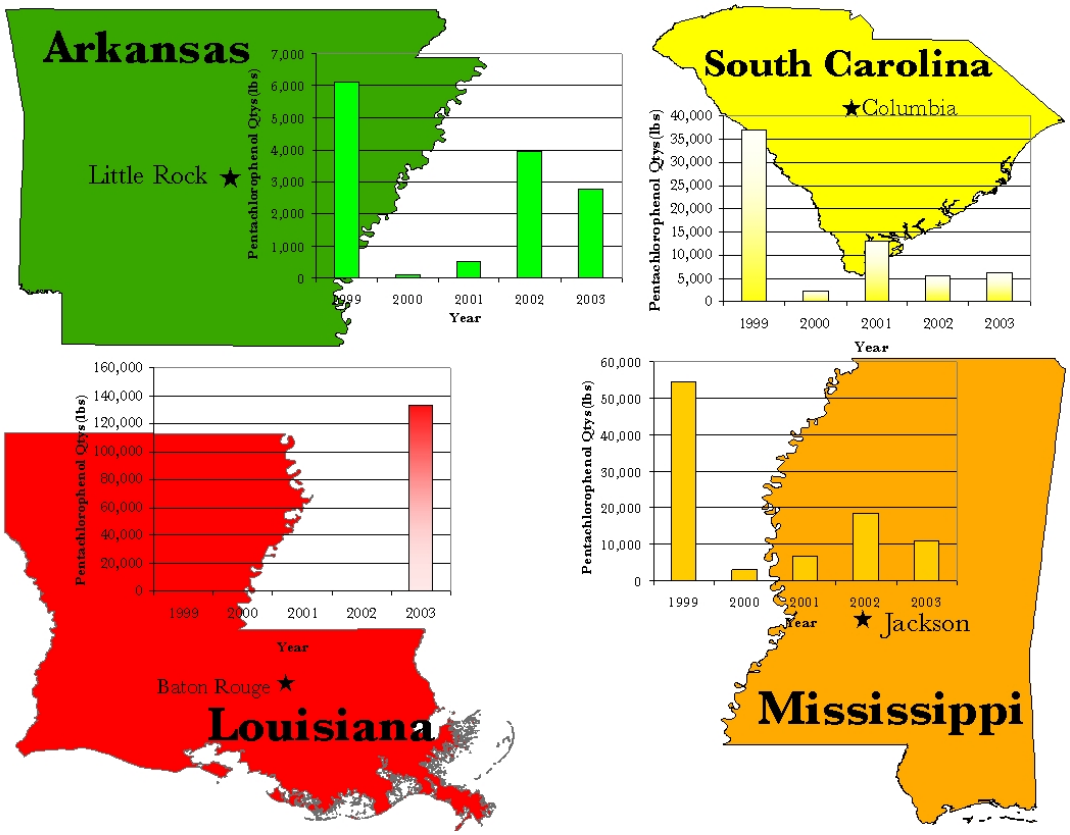

Exhibit 4. 199. Trends Analysis on States with Largest Quantity Increase and Decrease (1999 – 2003): Facilities in Louisiana and Alabama

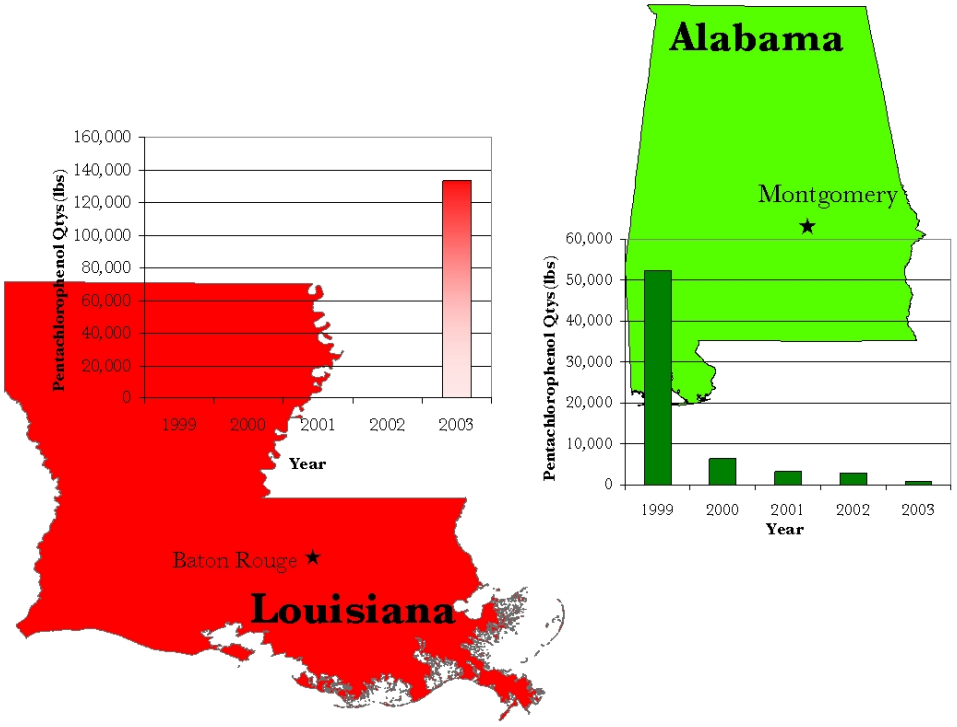

Exhibit 4.200 shows how pentachlorophenol was managed in 12 states where facilities reported quantities of this PC in 2003. In 2003, about 77 percent of pentachlorophenol was disposed offsite, primarily by 1facility in Louisiana. Otherwise, most facilities used treatment (primarily offsite) to manage their pentachlorophenol. Three facilities, 1 each in the states of Alabama, Georgia, and Missouri, managed the majority of their pentachlorophenol via offsite energy recovery. Very little recycling of pentachlorophenol was reported in 2003.

Exhibit 4. 200. Management of Pentachlorophenol in States (2003)

State	Total Priority Chemical Quantity (2003)	Onsite Disposal	Offsite Disposal	Onsite Energy Recovery	Offsite Energy Recovery	Onsite Treatment	Offsite Treatment	Onsite Recycling	Offsite Recycling
Louisiana	133,535	0	123,500	0	0	0	10,035	0	0
Mississippi	10,861	0	4	0	17	20	10,820	0	0
South Carolina	6,186	0	0	0	0	86	6,100	0	0
Arkansas	2,770	0	3	0	0	0	2,767	0	0
Oregon	1,827	0	0	0	0	0	1,827	0	2
Missouri	1,459	0	0	0	1,123	0	336	0	0
North Carolina	1,157	0	0	0	0	35	1,122	0	0
Nevada	955	0	0	0	0	0	955	0	0
Alabama	924	0	0	0	783	85	56	52	0
Minnesota	589	0	444	0	0	23	122	0	0
Washington	265	0	0	0	0	265	0	0	0
Georgia	232	0	0	0	230	0	2	0	0

Industry Sector (SIC) Trends- Pentachlorophenol. Exhibit 4.201 shows the PC quantity (pounds) of pentachlorophenol in 5 industry sectors (SIC codes) where facilities reported this chemical in 1999-2003. In 2003, 19 facilities in 3 industry sectors reported a PC quantity of pentachlorophenol. Facilities in the SIC 2491 (Wood Preserving) industry sector accounted for almost 100 percent of this chemical in 2003. One facility, located in Louisiana, reported about 84 percent of the total quantity reported by SIC 2491 facilities. The quantity of pentachlorophenol reported by this facility accounted for most of the increase that occurred in 2003, compared to quantities reported in 2000-2002.

Exhibit 4. 201. Industry Sector-Level Information for Pentachlorophenol (1999-2003)

Primary SIC Code	SIC Description	Number of Facilities for this SIC Code (2003)	1999	2000	2001	2002	2003	Change in Quantity (1999-2003)	Percent Change in Quantity (1999-2003)	Percent of Total Quantity of this Priority Chemical (2003)
2491	Wood preserving	17	174,338	27,336	34,016	36,116	160,486	-13,852	-7.9%	99.8%
9511	Air, water, and solid waste management	1	0	0	0	0	265	265	NA	0.2%
5169	Chemicals and allied products, nec	1	0	442	25	25	9	9	NA	0.0%
2869	Industrial organic chemicals, nec	0	38,657	42,012	0	0	0	-38,657	-100.0%	0.0%
2879	Pesticides and agricultural chemicals, nec	0	0	0	20,298	715	0	0	NA	0.0%

Exhibit 4.202 shows how pentachlorophenol was managed by the 19 facilities in the 3 industry sectors that reported a quantity of this PC in 2003. About 77 percent of the total quantity of pentachlorophenol was sent to offsite land disposal – primarily by 1 facility in SIC 2491. Treatment, primarily offsite, was used to manage about 22.5 percent of the pentachlorophenol. Only a small quantity of pentachlorophenol was recycled in 2003 –primarily by 1 facility in Alabama.

Exhibit 4. 202. Management of Pentachlorophenol in Industry Sectors (SIC Codes) (2003)

Primary SIC Code	SIC Description	Total Priority Chemical Quantity	Onsite Disposal	Offsite Disposal	Onsite Energy Recovery	Offsite Energy Recovery	Onsite Treatment	Offsite Treatment	Onsite Recycling	Offsite Recycling
2491	**Wood preserving**	**160,486**	**0**	**123,951**	**0**	**2,153**	**249**	**34,134**	**52**	**2**
9511	**Air, water, and solid waste management**	**265**	**0**	**0**	**0**	**0**	**265**	**0**	**0**	**0**
5169	**Chemicals and allied products, nec**	**9**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**

Recycling. Exhibit 4.203 provides some indication of the extent to which facilities in certain industry sectors recycled at least 100 pounds of pentachlorophenol in 1999-2003, rather than manage it as a waste. For those year(s), the facility did not report a PC quantity, i.e., a quantity managed via land disposal, energy recovery, or treatment.

Exhibit 4. 203. Facilities reporting Recycling but not a Priority Chemical quantity (1999-2003)

			1999		2000		2001		2002		2003	
Number of Facilities	**EPA Region**	**State**	**Onsite Recycle**	**Offsite Recycle**	**Onsite Recycle**	**Offsite Recycle**	**Onsite Recycle**	**Offsite Recycle**	**Onsite Recycle**	**Offsite Recycle**	**Onsite Recycle**	**Offsite Recycle**
SIC 2499 -- Wood products, nec												
1	7	Nebraska	760	0	760	0	0	0	0	0	0	0
SIC 5171 -- Petroleum bulk stations and terminals												